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disposition observed by Tafani 1889, 48, 116, in mice ova at this stage ; Tafani describes each cell as having the form of a three-sided pyramid with the apex at the centre of the ovum and a convex base forming part of the external surface of the yolk. That the two first cleavage planes are meridional is rendered probable by the arrangement in the four cell stage observed by Selenka in the Virginian opossum. (Fig. 10.)

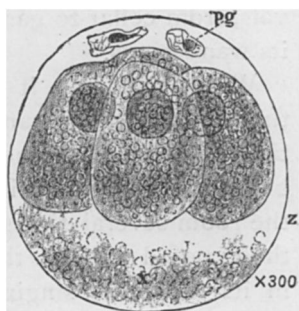


Fig. 10. Ovum of Virginian opossum with four segments; after Selenka.

(*To be continued.*)

THE SONG OF THE SINGING MOUSE.

BY. WM. T. DAVIS.

IN the daily papers and in scientific journals references to singing mice are not uncommon, some relating to wild species, but generally to the house mouse. The authors of these notices usually refer to the mice as singing from happy choice, as if they greatly enjoyed their own music, and in captivity, they have been reported as singing when food was given them, or when turning the wheel, as expressive of delight and high spirits. In some cases a mouse may be able to sing at will, but I think, from the descriptions I have read, that it is generally involuntary, as it certainly was in the individual that came under my own observation.

Several years ago, in November, I heard a strange noise near some water pipes in a store room, and at first thought that one of them had broken, and that a little stream was gurgling between the walls. However, later on, this gurgling noise was found to be produced by a mouse, which ran from behind various boxes as they were, in turn, removed, keeping up a constant song. A trap was set, and after a few days the mouse was captured. In the meantime, it was heard at inter-

vals, from cellar to garret, as this tell-tale song gave notice of its wanderings.

When removing it from the trap to the cage, and many times afterward, it ran about a small room, and the most noticeable feature on these occasions was the unvaried song, it being especially loud if I caused the mouse to scamper around the room several times without stopping. When gnawing on the exposed wood in the cage, when eating, or when disturbed in its nest, this singing was also particularly loud; in fact, upon any exertion, the song was produced, varying in volume in proportion to the amount of exercise.

On Thanksgiving day, eleven days after her capture, my mouse had two young, poor, miserable, little creatures, but, nevertheless, able to squeak and make considerable noise. It was just previous to, and for some time after the birth of these young, that *Mus* sang most continuously.

The young grew apace, and on December 14th, one was looking out of the nest, while the mother kept up a constant singing, probably being much excited thereby. At this stage the baby mice were funny little bodies, sparsely covered with hair and the dimensions of a respectable peanut. On the 19th, both of the young mice were out of the nest, and one was quite helpless, laying on his back kicking and panting after he had tumbled about the cage. I was afraid he would be unable to get into the nest again, so I rendered some assistance. However, in about fifteen minutes he was out as before, tumbling about in just the same rough manner, the mother all the while keeping up a constant singing, and alternately running in and out of the nest. After a time she picked up the little mouse by the side of the neck, carried it across the cage and put it in the nest, and I did not see it again. The other baby mouse was quite able to care for itself.

On December 21st the mother mouse ate about half of one of her offspring, commencing at the head. The one devoured was the most backward of the two, and I found the lively fellow, on this occasion, at the other end of the cage, the most distant point from his mother. I have had a full-grown *Hes-*

peromys mouse eat a large portion of one of the same species, though there was plenty of food in the cage at the time ; and, as with this *Mus*, it started its cannibalistic operations with the head of its companion.

These two mice were not very good specimens as mice go. The mother was small and thin and her offspring, at first, equally miserable in appearance ; but an abundant food supply finally bettered their condition. Fourteen more young, divided into four litters, were born to this musical rodent in the course of the year and seven months of her captivity, and the incidents detailed in the account of the first were repeated with slight variations. One morning it was discovered that the singer had devoured her spouse, though, be it said in her favor, he may have died first. The family was thus broken up, and the probable cause, in consequence, transferred to a bottle of alcohol, where she at present remains.

As I have said, it was the time at which the mouse was the weakest, when made to exercise greatly and breath fast, that the singing was chiefly noticeable, and I think a few quotations from some other notes on the subject will tend in the same direction. Mr. Wm. H. Edwards, in the *AMERICAN NATURALIST*, Vol. III., p. 551, says : " The captive seemed pleased with his quarters, and soon manifested his content at the quality and regularity of his rations by singing his unvarying tune at all hours." When ejected from his bed " he would manifest his displeasure by flying across the cage into the wheel, which he would make spin, emitting all the while his peculiar note with great shrillness and rapidity."

The Rev. Samuel Lockwood, in his note on " A Singing *Hesperomys*," printed in the *AMERICAN NATURALIST*, says : " A very noticeable fact was that a great deal of the little creature's song was poured forth while at play—that is, while in actual activity, and take the wheel-play, for instance, when really in quite violent exercise. A thing, too, which much surprised me was that often when eating she sang and eat at the same time, literally in the same breath." Mr. Lockwood thought that this last might be suggestive of a physiological

difficulty, but he nevertheless gives reasons, under four heads, to disprove the disease theory, and says in the fourth that "she can sing and eat at the same time."

From the facts given above it will be observed how the circumstances under which these mice sang agreed: when ejected from bed, when eating or gnawing, and, as I have shown, when forced to run rapidly about a room, in which act there could be no pleasure. Neither was it happy feelings that prompted the song when I meddled with her babies, when she cowered at the other end of the cage, evincing all the anxiety that is usually shown by animals under such circumstances. In birds we know the cause of song for rivalry or for pleasure, but we always hear quite other notes than those expressive of pleasure, when we look at their precious eggs.

EDITOR'S TABLE.

EDITORS: E. D. COPE AND J. S. KINGSLEY.

As suggestions looking to the adoption of some flower as emblematic of our country are now being made, we present some opinions on the topic. The conditions to be satisfied are: 1st, that the flower shall be conspicuous; 2d, that it shall be available for architectural carving; and 3d, that it shall be characteristically American. These conditions exclude many plants that have been named. Propositions in favor of introduced plants, such as the *Convolvulus*, are out of the question. Members of the *Compositæ* are mostly undistinguishable in sculpture, and such forms as the golden-rod, which has met with much favor, are unavailable for architecture. The mountain laurel (*Rhododendron*), is objectionable, since the genus is widely distributed in other regions; and the same objection holds true of the *Magnolias*. The Indian Corn and the Sweet Gum (*Liquidambar*) are both destitute of conspicuous flowers. We wish to call attention to two species which satisfy all the conditions. These are the *Kalmia latifolia* ("laurel"), and the *Liriodendron tulipifera* ("tulip-tree"). Both are of wide distribution; both are conspicuous in various